

REMARKS

In response to the Office Action dated 15 July 2002, Applicant respectfully offers the following Amendment and Remarks. Reconsideration and reevaluation of the objections and rejections is respectfully requested.

With reference to page 2, the Examiner noted that the numeral 2 was used to designate both the top end top swage and the second outer cylindrical surface. Attached to this Amendment is a corrected Figure 1, with the changes being shown in red and highlighted in yellow; approval of said corrections to the Figure is respectfully requested.

The Examiner noted certain objections to the Specification. The Specification has been amended in order to obviate the objections noted by the Examiner at page 2 of the Office Action. Support for the amendments to the specification can be found at page 4, lines 1-10; page 5, lines 8-9; page 8, lines 11-16; page 9, lines 4-9; and page 15, lines 1-6. With reference to Claim rejections under 35 U.S.C. § 112, those objections have been obviated by the Amendment attached hereto.

At page 3, the Examiner rejected Claims 21-28 and 34-37 over U.S. Patent No. 6,276,690 under the non-statutory double patent rejection, which is based on the judicially created doctrine. Attached to this Amendment is a Terminal Disclaimer signed by the undersigned, who is the attorney of record in this matter.

Additionally, the Examiner noted that Claims 21-28 and 34-37 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over Owen et al. (U.S. 3,948,321). The Examiner noted that the anchoring member of the Owen et al. patent contained "a first plurality of continuous, individual circumferential ribs". Applicant respectfully submits that with the present claims, the claims are

presently novel over the prior art.

The Owen '321 Patent discloses a liner 13 having an annular body portion 31 that expands to engage a casing 21. Col. 3, lines 65-69. Included in the body portion 31 is a seal means 95 for ensuring fluid impermeable connection between it and the casing 21. Col 4, lines 13-15. Applicants
5 respectfully submit that this disclosed arrangement does not teach or suggest claims 21 and 34.

First, claims 21 and 34 have been amended to require that the rib provides a substantially metal-to-metal seal. A substantially metal-to-metal seal is neither disclosed nor suggested by the Owen '321 Patent. The Owen '321 Patent uses a molded oil and gas resistant rubber seal ring to provide fluid impermeability. Thus the Owen '321 Patent teaches the use of an elastomer-to-metal
10 seal. Likewise, the Owen '091 Patent uses an O-ring seal means 139. Col. 11, lines 15-22. The feature that the Examiner contends is a rib in the Owen '321 patent functions only as a recess for receiving the seal means 95. Apart from holding the seal means 95, to Applicant's reading, this feature serves no function and specifically does not form a metal-to-metal seal. Thus, the prior art of record neither discloses nor suggest the inventions claimed in claims 21 and 34.

15 Furthermore, the Owen '321 Patent teaches away from the use of an elastomer-free or substantially metal-to-metal seal. The Owen '321 Patent states that:

Tests indicate that the annular body portion 31 will form a metal-to
-metal inside clean pipe, but the seal means 49 ensures sealing
regardless of whether or not the pipe, or casing, is clean. Col 4, lines
20 17-20.

Thus, the Owen '321 Patent suggests that expanding one metal tubular against the interior of another metal tubular can provide an adequate seal in a "clean" environment, but in a well bore environment, with its rock cuttings, drilling mud, metal debris, gas, fluids, and the like, the Owen

'321 Patent teaches that an elastomer seal is needed. Likewise, the present invention recognizes that expanding one metal tubular against the interior of another metal tubular provides an inadequate seal but the present invention teaches the inclusion of one or more ribs to form a suitable metal-to-metal rather than using an elastomer seal.

Because the prior art of record does not teach or suggest the inventions claimed in claims 21 and 34, Applicants respectfully submit that claims 21 and 34, as amended, are in condition for allowance.

In conclusion, Applicant respectfully submits that the remaining claims, namely Claims 21-28 and 34-37 are now in a position for allowance. It should be noted that Claims 29-33 were subject to a restriction requirement. If it would aid in the disposition of this matter, the Examiner is kindly requested to contact the undersigned. Allowance at an early date is respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

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A. At page 8, lines 4-10, please delete the present paragraph and replace with the following paragraph:

This application is a continuation of application serial no. 09/303,201, filed on 30 April 1999. Referring now to Fig. 1, a cross-sectional view of the novel device 2 before engagement of the sealing mechanisms will now be described. The device 2 generally contains a top swage 4. The
10 top swage 4 contains a first tapered outer cylindrical surface 6 that extends to a conically tapered surface 8 which in turn extends to the second outer cylindrical surface 10. The top swage 4 has a top end [10] 11 that extends radially inward to the inner bore surface 12 that terminates at the end 14. In the preferred embodiment, the top swage 4 is made of high tensile steel, having a 108 or
15 higher on the Rockwell B scale.

B. At page 8, lines 17-22, please delete the present paragraph and replace with the following paragraph:

The outer cylindrical surface also has contained thereon an elastomeric seal 20, also
20 referred to as an o-ring or polymeric seal, that is also utilized in providing a seal with an inner wall of a concentric tubular member, as will be described later in the application. The sealing member 16 has a first end 22 that extends radially inward to an inner bore 24, shoulder 26, and internal thread means 28. The sealing member 16, which is also referred to as the first cylinder anchoring member or the first cylinder sleeve, is a metal material having a hardness of 105 or less on the
25 Rockwell B scale, in the preferred embodiment.

C. At page 9, lines 10-21, please delete the present paragraph and replace with the following paragraph:

The outer cylindrical surface also has contained thereon an elastomeric seal 48 also referred to as an o-ring, that is also utilized in providing a seal with an inner wall of a concentric tubular member, as will be described later in the application. The sealing member 40 has a first end 50 that extends radially inward to an inner bore 52, and shoulder 54. In the preferred embodiment, the sealing member 40, which may also be referred to as the second cylindrical anchoring member or the second cylindrical sleeve, is also a metal member, with the metal having a hardness of 105 or lower on the Rockwell B scale. The device 2 will also contain a bottom swage 56. The bottom swage 56 contains a first tapered outer cylindrical surface 58 that extends to a conically tapered surface 60 which in turn extends to the second outer cylindrical surface 62. The bottom swage 56 has a bottom end 64 that contains a chamfered surface 66 which in turn extends radially inward to the inner bore surface 68 that contains the annular groove 70. The bottom swage 56 is also made of metal and in the preferred embodiment is a high tensile steel that has a hardness of 108 or higher on the Rockwell B scale.

IN THE CLAIMS:

Kindly rewrite the claims as follows:

5 21. (Once Amended) An anchoring apparatus for use in a tubular member, the apparatus comprising:

 -a top swage member [having a longitudinal center of axis, wherein said top swage member has a first cylindrical surface that extends to a second conical surface];

 -a first cylindrical anchoring member disposed about said top swage member [and
10 wherein said first cylindrical anchoring member has a complete outer perimeter], said first anchoring member containing a first plurality of [continuous, individual] expandable circumferential ribs [disposed about said outer perimeter, wherein] formed thereon, said first plurality of [continuous, individual] circumferential ribs [comprise a series of annular grooves encircling said first cylindrical anchoring member, and wherein said first cylindrical anchoring member has a top end and a bottom
15 end and wherein said first cylindrical surface of said top swage member is concentrically disposed within said first cylindrical anchoring member; and wherein said first cylindrical anchoring member is made of a malleable metal having a hardness of 105 or less on the Rockwell B scale] being configured to form a substantially metal-to-metal seal with the tubular member;

 -a setting [means] tool for driving said top swage member [longitudinally downward
20 relative to] into said top swage [swage's longitudinal center axis] and radially deforming said first cylindrical anchoring member so that said first plurality of [continuous, individual] circumferential ribs are expanded outward; and

 -an extension member having a first end [and a second end and wherein said first end is] attached to [said bottom end of] said first cylindrical anchoring member.

22. (Once Amended) The apparatus of claim 21 wherein said [annular grooves have a radius of curvature of approximately 0.0470 inches, and wherein said grooves have a height of approximately 0.033 inches] first plurality of circumferential ribs at least partially embed in the tubular member when forming said substantially metal-to-metal seal.

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23. (Once Amended) The apparatus of claim 22 wherein said first cylindrical anchoring member further comprises an elastomeric seal set apart from said first plurality of circumferential ribs.

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24. (Once Amended) The apparatus of claim 23 further comprising:

-a second cylindrical anchoring member attached to [said] a second end of said extension member, [wherein] said second cylindrical anchoring member [has a complete outer perimeter, and wherein said second cylindrical anchoring member contains] including a second plurality of [continuous, individual] circumferential ribs disposed about said second cylindrical anchoring member [and completely encircles the outer perimeter of said second cylindrical anchoring member], [and wherein] said second plurality of [continuous, individual] circumferential ribs [comprise a series of annular grooves encircling said second cylindrical anchoring] being configured to provide a substantially metal-to-metal seal with the tubular member;

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-a bottom swage member disposed within said second cylindrical anchoring member[, said bottom swage member having a longitudinal center of axis];

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-and wherein said setting [means also comprises means] tool is further adapted for driving said bottom swage member [longitudinally upward relative to] into said bottom swage [member's longitudinal center axis] member and radially deforming said [first] second cylindrical anchoring member so that said [continuous] second plurality of circumferential ribs are expanded outward.

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26. (Once Amended) The apparatus of claim 25 wherein said second cylindrical anchoring member further comprises an elastomeric seal set apart from said second plurality of circumferential ribs.

5 34. (Once Amended) An apparatus for sealing and anchoring within a tubular member, the apparatus comprising:

-a top swage member[, said top swage member having a longitudinal center of axis and having a first end and a second end];

10 -a first cylindrical sleeve being at least partially disposed within [the first end of] said top swage, said first sleeve [being made of a malleable metal having a hardness of 105 or less on the Rockwell B scale and wherein said first cylindrical sleeve contains] including a first plurality of [individual] circumferential ribs disposed thereon [comprising a series of circular annular grooves encircling said first cylindrical sleeve, and wherein said first cylindrical sleeve has a top end and a bottom end and wherein said first cylindrical sleeve has disposed thereon a first] for forming a
15 substantially metal-to-metal seal with the tubular member and a first elastomeric seal spaced apart from said first plurality of circumferential ribs;

20 -a setting [means] tool for driving said top swage member [longitudinally downward relative to] into said top swage [member's longitudinal center axis] member and wherein [said longitudinal movement] driving of said top swage member radially deforms said first cylindrical sleeve so that said first cylindrical sleeve expands radially outward.

35. (Once Amended) The apparatus of claim 34 further comprising:

25 -a second cylindrical sleeve connected to said first cylindrical sleeve, said second cylindrical sleeve [being made of a malleable metal having a hardness of 105 or less on the Rockwell B scale, and wherein said second cylindrical sleeve contains] including a second plurality

of [individual] circumferential ribs disposed thereon [comprising a series of circular annular grooves encircling said first cylindrical sleeve, and wherein said second cylindrical sleeve has a top end and a bottom end] for forming a substantially metal-to-metal seal with the tubular member;

-a bottom swage member [disposed within said second cylindrical sleeve, said
5 bottom swage member having a longitudinal center of axis and having a first end and a second end, and wherein said first end is] disposed within said second cylindrical sleeve;

-and wherein said setting [means] tool further [comprises means] adapted for driving said bottom swage [longitudinally upward relative to] into said bottom swage [member's longitudinal center axis and wherein said longitudinal movement of said bottom] member such that said swage
10 member radially deforms said second cylindrical sleeve so that said second cylindrical sleeve expands radially outward.

36. (Once Amended) The apparatus of claim 35 [wherein said] further comprising a series of annular grooves [of said first cylindrical sleeve have a radius of curvature of between
15 0.030 inches to 0.060 inches, and wherein said annular grooves of said second cylindrical sleeve have a radius of curvature of between 0.030 inches to 0.060 inches] associated with said first and second plurality of circumferential ribs.

37. (Once Amended) The apparatus of claim 36 wherein said second cylindrical sleeve
20 has disposed thereon a second elastomeric seal set apart from said second plurality of circumferential grooves.